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treated in a paper on fertilization and hybridization read in Haarlem, Holland, by the same author in 1903. This essay is also modified from the original, being somewhat extended and brought more nearly down to date. It occupies the last 40 pages of the book, and presents a simple and interesting statement of the relation between modern cytological and genetic investigations as bearing upon the problem of unit characters.

Even in the brief time since this paper was revised for incorporation into this book, some of its subject matter has been given interpretations which render it unavailable for the particular application made, so that in at least one point it would need to be fundamentally rewritten. I refer particularly to the fact that the behavior of *Cytisus Adami* is taken as one of the clearest and simplest examples for demonstrating the existence of unit characters. Owing to the work of WINKLER and BAUR,[2] we now have a conception of this and other so-called graft hybrids which rules them out as examples of segregating unit characters.

Despite the fact that the book is neither strictly modern nor perfectly historical, it will be read with much profit by those interested in the subject of heredity and evolution, and all such will appreciate the work of GAGER in making this classic piece of speculation available to English readers.—GEO. H. SHULL.

A plant physiology

A treatise on plant physiology written by LECLERC DU SABLON[3] has many features of interest. One is impressed by the definite, concrete treatment of the subject. When a topic is considered, a great worker in that line is selected and his methods and results clearly stated. This leaves the student with a clear idea of the results, and how they were obtained. This method certainly has advantages over the usually concise but rather abstract statements for beginning students, and it might be desirable to have such a treatise in English. However, a statement of this kind must necessarily have its shortcomings, and they are unnecessarily increased in this work. It must omit many contributions, and this is shown in the present work by the preponderance of attention given to French investigators. French students using the text would probably conclude that France has been leading in plant physiology, and that SABLON is by no means the least of the producers.

The book can in no sense be considered critical. This objection the author answers by saying that he intentionally avoids unsettled questions and devotes the space to the well established phases of the subject. One is forced to believe that he could have given a more modern statement without running unduly into unsettled questions. It would seem, for example, that a modern treatise on the subject ought to make some use of the masterly contributions of BROWN and ESCOMBE on the energy and material exchanges of the green leaf, and of FITTING'S telling work on geotropism.

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[2] For an excellent review of the recent work on graft hybrids and chimeras, see BOTANICAL GAZETTE for February 1911.

[3] SABLON, LECLERC DU, Traité du physiologie végétale et agricole. vi+610. Paris: J. B. Bailliere et Fils. 1911.

The order of treatment differs from that of most English and German works. The headings of the chapters are as follows: (1) nutritive reserves; (2) respiration; (3) fermentation; (4) assimilation of carbon; (5) mineral nutrition; (6) circulation of water; (7) transpiration; (8) latent life and development; (9) movements; (10) influences of environment; (11) physiology of the species.

The agricultural significance of the subject is emphasized. In the main this is done by using data gained from a study of the economic plants. The book is not indexed, but this is partly cared for by a full table of contents.—WILLIAM CROCKER.

MINOR NOTICES

Das Pflanzenreich.[4]—Part 43 contains the first portion of a monographic treatment of the Umbelliferae by Dr. HERMANN WOLFF. The present part includes 9 genera of the tribes *Apioideae* and the heteroclitus *Ammineae,* to which are referred about 150 species. The body of the publication is occupied mainly with the genus *Bupleurum,* which is represented by approximately 100 species, nearly all occurring in the northern hemisphere. One new genus (*Ledebouriella*) is proposed, being based on *Rumia multiflora* Ledeb. of uncertain native habitat and *R. seseloides* Hoff. from the Altai.

Part 44 continues the elaboration of the Euphorbiaceae by Professor F. PAX and concerns only the tribe *Adrianeae.* The author recognizes 8 genera and 144 species, of which 34 are new to science. One new genus (*Cephalocrotonopsis*) is described, founded on *Cephalocroton socotranus* Balf. f. from the steppes of northern Africa. Of the 8 genera constituting the tribe, the genus *Manihot* comprises by far the largest number of species (129), and these have their center of distribution in Brazil.

Part 45 is devoted to a monographic consideration of the tribe *Dendrobiinae* of the Orchidaceae by the noted specialist Professor FR. KRÄNZLIN. Seven genera are elaborated, the first in importance being *Dendrobium.* This genus, as here treated, includes approximately 600 species, numerous varieties, and over 80 hybrids; and its greatest specific diversity is in the Monsoon region of the Old World. The genus is divided into ten subgenera which are

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[4] ENGLER, A., Das Pflanzenreich. Heft 43 (IV. 228). Umbelliferae-Apioideae-Bupleurum, Trinia et reliquae Ammineae heteroclitae von HERMANN WOLFF. pp. 214. *figs. 24 (155).* *M* 10.80. Heft 44 (IV. 147. II). Euphorbiaceae-Adrianeae von F. PAX. pp. 111. *figs. 35 (151).* *M* 5.70. Heft 45 (IV. 50. II. B. 21). Orchidaceae-Monandrae-Dendrobiinae von FR. KRÄNZLIN. pp. 382. *figs. 35 (327).* *M* 19.20. Leipzig: Wilhelm Engelmann. 1910.